Space Weather Forecast

Issued on Friday, 11 August 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity recorded at GOES16 has been Low over the past 24 hours, with occasional Common class flares observed. The largest of these flares was from ex-AR3398, that is now behind the southwestern limb. Most remaining Common class flares where produced by AR3395.
There are now five numbered sunspot regions on the visible disc, and three yet to be numbered regions. Of the numbered regions AR3394 and AR3395 are the largest on the disc, with AR3394 moderately magnetically complex and AR3395 magnetically complex. The remaining regions on the visible disc are small, simple and weak and have shown little change.
A large filament gradually released in the far south of the facing side of the disc around 10/0600UTC. The resultant Coronal Mass Ejection (CME) has been analysed and is considered to miss Earth. Therefore at the time of writing no Earth-directed CMEs have been identified.

Solar Wind / Geomagnetic Activity: The solar wind was mostly at background levels until the evening. Then the solar wind increased to slightly elevated levels, and briefly reached elevated levels late evening, peaking at 514 km/s at 10/2159 UTC. The strength of the solar wind's magnetic field was mostly at weak levels, but after 10/1606 UTC a minor discontinuity occurred, with the strength rising to briefly reach moderate levels, before ending the period at weak levels again. The important north-south component was predominantly weakly negative, but as the weak discontinuity occurred so the north-south became positive and remained that way.
The net result of the above solar wind measures was for Quiet geomagnetic conditions throughout.

Energetic Particles / Solar Radiation: Solar radiation storm levels showed the ongoing tail of a response to the Strong-class flare peaking at 07/2046UTC from a large sunspot group now long-past the western solar horizon. Having previously reached the S1 (Minor Storm) levels, the decreased below the S1 (Minor Storm) after 10/0955 UTC.

Four-Day Space Weather Forecast Summary

Solar Activity: Low levels of solar activity are anticipated, with only a Chance of Moderate class flares, this initially most likely from ex-AR3398 but then after today from AR3394 and AR3395 as ex-AR3398 rotates further behind the southwestern limb. New regions may emerge from the far side onto the east limb, but the flare risk will not be increased until they have arrived and been assessed.

Solar Wind / Geomagnetic Activity: No significant fast winds or Earth-bound CME's, feature in the forecast. Therefore mainly Quiet conditions should persist, with a chance of isolated Unsettled periods.

Energetic Particles / Solar Radiation: The risk of further S1 Minor Solar Radiation Storms

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should continue to decrease, with ex-AR3398 continuing to rotate further away beyond the west limb, while AR3394 and AR3394 remain relatively stable with no significant flares so far.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	Yes	15	10	5	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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